

# BDR SEMINAR in Yokohama

## Ya-Ming Hou Howard Gamper

Department of Biochemistry and Molecular Biology  
Thomas Jefferson University

**Thursday, November 14, 2019**

15:30-17:00, Koryuto Hall, Main Office Building, Yokohama

### **tRNA Methylation Is a Global Determinant of Bacterial Multi-Drug Resistance**

Ya-Ming Hou

Gram-negative bacteria are intrinsically resistant to drugs. Here, we show that m<sup>1</sup>G37-tRNA methylation determines the synthesis of a multitude of membrane proteins via its control of translation at proline codons near the start of open-reading frames. Our results highlight the potential of tRNA methylation in codon-specific translation to control the development of multi-drug resistance in Gram-negative bacteria.

### **Insights into Genome Recoding from the Mechanism of a Classic +1-Frameshift-Suppressor tRNA**

Howard Gamper

While quadruplet codons are attractive for genome recoding, their translation mechanism is unknown. Using a classic +1-frameshift-suppressor tRNA SufB2 as a model, we elucidated the mechanism by which quadruplet codons are translated by +1-frameshifting. Our results highlight the potential of ribosomal head-domain-mediated translocation as a regulator of +1-frameshifting and suggest that successful engineering of head swiveling can improve the efficiency of genome recoding.



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